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09/752,683	01/03/2001	Yoichi Yamamoto	2589-9	9757

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EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 03/15/2004

17

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/752,683

Applicant(s)

YAMAMOTO ET AL.

Examiner

Leonid Shapiro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of claim 10: **“at least first, second third separate and distinct optical sensors fir measuring how the liquid crystal panel is emitting R,G,B light...”** must be shown or the feature(s) canceled from the claim(s).

No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 10 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The newly introduced limitation of claim 10: **“at least first, second third separate and distinct optical sensors fir measuring how the liquid crystal panel is emitting R,G,B light...”** was not described in the specification.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8, 13, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuzuki et al. (US Patent No. 6,388,716 B1) in view of Suzuki (JP Patent No. 10228010 A) and Bigio et al. (US Patent No. 6,157,143)

As to claim 1, Tsuzuki et al. teaches an image display device, comprising: a liquid crystal panel for displaying an RGB image including RGB colors (See Figs. 3, 13-14, items 11R, 11G, 11B, 96-97, See from Col. 17, Line 65 to Col. 18, Line 3); at least one optical sensor for measuring how the liquid crystal panel is emitting R (red), G (green) and B (blue) light (See Fig 13-14, items 96, 97, in description See Col.17, Lines 65-67 and Col. 18, Lines 1-35), wherein R, G and B light emitted by the liquid crystal panel are measured independently from one another by the at least one optical sensor (See Fig. 3, items 11R, 11G, 11B, in description See Col. 18, Lines 29-35).

Tsuzuki et al. does not show a light source for emitting light toward the liquid crystal panel that the liquid crystal panel receives and uses for display operation and wherein light emission the light source is controlled according to a measurement value obtained from optical sensor in order to correct brightness or chromaticity of both of the liquid crystal panel.

Suzuki teaches a light source for emitting light toward the liquid crystal panel that the liquid crystal panel receives (See Drawings 1-2, item 5, in Detailed Description See Page 2, paragraphs 0010) and uses for display operation lighting of the light source is controlled according to a measurement value obtained from optical sensor in order to correct brightness (See Drawings 1-2, items 1-7, S101-S106, in Detailed Description See Page 1-2, paragraphs 0005-0014).

It would have been obvious to one of ordinary skill in the art in the time of the invention to use a light source controlled according to a measurement value obtained from optical sensor to correct brightness as shown by Suzuki in the Tsuzuki et al. apparatus which measures R, G and B independently from one another in order to correct brightness and chromaticity.

Tsuzuki et al. and Suzuki do not show a temperature sensor and lamp temperature circuit for determining a temperature of the light source, light emission of the light source is also based upon temperature of the light source as determined by a temperature sensor and the lamp temperature circuit.

Bigio et al. teaches a temperature sensor and lamp temperature circuit for determining a temperature of the light source (See Fig. 2, items 21,22, in description See Col.3, Lines 24-28).

It would have been obvious to one of ordinary skill in the art in the time of the invention to use a temperature sensor and lamp temperature circuit for determining a temperature of the light source as shown by Bigio et al. in Suzuki and the Tsuzuki et al. apparatus to add the temperature of the light source as parameter to control light emission of the light source in order to maintain the desired flat panel display luminance (See Col. 2, Line 22 in the Bigio reference).

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As to claim 4, Tsuzuki et al. teaches the optical sensor has a light sensor area at least equal to areas of one R, one G, and one B dots added together (See Fig. 14, item 97, in description See col. 18, Lines 15-20).

As to claim 5, Suzuki teaches the brightness and/or chromaticity of liquid crystal panel is corrected by controlling a driving voltage of the light source (See Drawings 1-2, items 1-7, S101-S106, in Detailed Description See Page 1-2, paragraphs 0005-0014).

As to claims 2-3, Tsuzuki et al. teaches the optical sensor has a light sensor area at least equal to areas of one R, one G, and one B dots added together (See Fig. 14, item 97, in description See col. 18, Lines 15-20).

Tsuzuki et al. does not teach a viewing angle of the optical sensor is limited to 10 degrees in all directions and a measurement area of the optical sensor depends on the viewing angle.

As notoriously well known in the art that a measurement area of a sensor depends on its viewing angle and less than 10 degree viewing angle optical sensors could be manufactured.

It would have been obvious to one of ordinary skill in the art in the time of the invention to implement a sensor with a limited viewing angle (10 degree) in the Tsuzuki et al. apparatus in order to improve the image quality of the image.

As to claims 6-7, Tsuzuki et al. teaches that the light source is part of a backlight provided on the back of the liquid crystal panel and the RGB image is displayed by receiving image data transmitted from a transmitting side (See Fig. 13-14, items a1, 96, in description See Col. 18, Lines 7-8).

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As to claim 8, Tsuzuki et al. and Suzuki do not show a temperature sensor for measuring surface temperature of the light source, wherein the driving voltage or driving current of the light source is controlled in such way that the surface temperature of the light source is kept constant and the temperature sensor is a thermistor.

Bigio et al. teaches a temperature sensor and lamp temperature circuit for determining a temperature of the light source See Fig. 2, items 21,22, in description See Col.3, Lines 24-28).

It would have been obvious to one of ordinary skill in the art in the time of the invention to implement Bigio et al. approach in Suzuki and the Tsuzuki et al. apparatus to add the temperature of the light source as parameter to control light emission of the light source in order to maintain the desired flat panel display luminance (See Col. 2, Line 22 in the Bigio reference).

As to claim 13, Tsuzuki et al. teaches optical sensors on a face of the LCD panel (See Fig. 14, items 96-96, in description See Col. 18, Lines 13-14).

As to claim 16, Bigio et al. teaches duty factor setter for setting a duty factor of a pulse signal in such way that, when the difference between a current and specified brightness values is negative, lamp current supplied to the light source is increased to eliminate the difference and, when the difference is positive, the lamp current is decreased to eliminate the difference when the current control 9see Fig. 1, items 12,14,16, in description See Col. 2, Lines 61-66).

4. Claims 12, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuzuki et al. in view of Suzuki.

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As to claim 12, Tsuzuki et al. teaches an image processing device including a display panel to produce an image (See Fig. 13-14, items 95-97, Col. 2, Lines 14-24), comprising: at least one sensor for measuring how the (red) R, (green) G, and (blue) B light is emitted from display panel (See Fig. 14, item 97, in description See Col. 18, lines 2-3) are measured by the at least one sensor independently from one another (See Fig. 3, items 11R, 11G, 11B, in description See Col. 18, Lines 29-35).

Tsuzuki et al does not show a light source that emits light that is received and used by the display panel, wherein brightness or chromaticity or both of the image output from the display panel is corrected by controlling light emission of the light source according to a measurement value obtained from the at least one sensor.

Suzuki teaches a light source for emitting light toward the liquid crystal panel that the liquid crystal panel receives (See Drawings 1-2, item 5, in Detailed Description See Page 2, paragraphs 0010) wherein brightness of the image output from the display panel is corrected by controlling light emission of the light source according to a measurement value obtained from the sensor (See Drawings 1-2, items 1-7, S101-S106, in Detailed Description See Page 1-2, paragraphs 0005-0014).

It would have been obvious to one of ordinary skill in the art in the time of the invention to use a light source controlled according to a measurement value obtained from optical sensor to correct brightness as shown by Suzuki in the Tsuzuki et al. apparatus which measures R, G and B independently from one another in order to correct brightness and chromaticity or both.

As to claim 15 Tsuzuki et al. teaches optical sensors on a face of the LCD panel (See Fig. 14, items 96-96, in description See Col. 18, Lines 13-14).



5. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuzuki et al., Suzuki, Bigio et al. as aforementioned in claim 8 in view Yamomoto et al. (US Patent No. 6,348,910 B1).

Tsuzuki et al., Suzuki, Bigio et al. do not show the temperature sensor as thermistor.

Yamomoto et al. teaches the temperature sensor is a thermistor (See Fig. 52, step S293, in description See Col.47, Lines 48-52).

It would have been obvious to one of ordinary skill in the art in the time of the invention to implement a temperature sensor as a thermistor as shown by Yamomoto et al. in the Tsuzuki et al., Suzuki, Bigio et al. apparatus in order to more reduce power consumption.

6. Claims 10, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuzuki et al. in view of Suzuki and Terasaki (US Patent No. 5,844,540).

As to claim 10 Tsuzuki et al. teach an image display device with a liquid crystal panel for displaying an image (See Figs. 13-14, items 96-97, See from Col. 17, Line 65 to Col. 18, Line 3), at least first, second and third separate and distinct optical sensors for measuring how the liquid crystal panel is emitting R (red), G (green), and B (blue) light, respectively, so that R, G and B light output from the liquid crystal panel measured independently (See Fig. 3, items 11R, 11G, 11B, in description See Col. 18, Lines 29-35); a signal reading circuit for converting a measurement value obtained from the optical sensor into a current brightness value of the liquid crystal panel (See Fig. 13, items 12,13,15, 20, Col. 18, Lines 24-35); a brightness setting circuit for permitting entry of specified brightness of the liquid crystal panel (See Fig. 13, items

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15-16, 20, 95-96, Col. 18, Lines 24-35); converting circuit for converting an output of the brightness setting circuit into a specified brightness value of the liquid crystal panel (See Fig. 13, items 15-16, 95, Col. 18, Lines 24-35); a calculator for calculating a difference between the current brightness value and the specified brightness value of the liquid crystal panel (See Fig. 13, item 20, See Col. 18, Lines 24-35).

Tsuzuki et al. does not show a backlight for illuminating the liquid crystal panel from behind, wherein the brightness of the liquid crystal panel is corrected by controlling light emission of the backlight according to the measurement value obtained from the optical sensors.

Suzuki teaches a light source for emitting light toward the liquid crystal panel that the liquid crystal panel receives (See Drawings 1-2, item 5, in Detailed Description See Page 2, paragraphs 0010) and lighting of the light source is controlled according to a measurement value obtained from optical sensor in order to correct brightness (See Drawings 1-2, items 1-7, S101-S106, in Detailed Description See Page 1-2, paragraphs 0005-0014).

It would have been obvious to one of ordinary skill in the art in the time of the invention to use a light source controlled according to a measurement value obtained from optical sensor to correct brightness as shown by Suzuki in the Tsuzuki et al. apparatus in order to correct brightness.

Tsuzuki et al. and Suzuki do not teach a duty factor setting circuit for outputting a pulse signal whose duty factor depends on an output of the calculator (controller or computer) and inverter for producing a driving voltage and a driving current for the backlight according to the pulse signal.

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Terasaki teaches a liquid crystal display with backlight control function is provided with PWM dimmer driving circuit including duty factor setting (See Fig. 9 and 10, in description See Col. 11, Lines 49-60) and inverter (See Fig. 22d and 22e, items 52, 58, 59, in description See Col. 2, Lines 43-58).

It would have been obvious to one of ordinary skill in the art in the time of the invention to implement a duty factor and inverter circuits as shown by Terasaki in the Tsuzuki et al. and Suzuki apparatus in order to more reduce power consumption.

As to claim 14, Tsuzuki et al. teaches optical sensors on a face of the LCD panel (See Fig. 14, items 96-96, in description See Col. 18, Lines 13-14).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuzuki et al., Suzuki and Terasaki in view of Bigio et al.

Tsuzuki et al. teaches a signal reading circuit for converting a measurement value obtained from the optical sensor into a current brightness and a current chromaticity value of the liquid crystal panel (See Fig. 13, items 20, 97, 96, 20, 22, 23, 24, 15, 16, 95, in description See Col. 18, Lines 24-35).

Tsuzuki et al., Suzuki and Terasaki do not show a thermistor whose resistance varies with surface temperature of the backlight and temperature reading circuit for converting the resistance of the thermistor into a surface temperature value of backlight, converting means for converting an output of the temperature reading circuit into a specified brightness value of the liquid crystal panel, wherein brightness and chromaticity of the liquid crystal panel are corrected

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by controlling light emission of the backlight according to the measurement values obtained from the optical sensors in such a way that surface temperature of the backlight is kept constant.

Bigio et al. teaches a temperature and optical sensors, and lamp temperature circuit for determining a temperature of the light source See Figs. 1-2, items 12,21,22, in description See Col.3, Lines 24-28).

It would have been obvious to one of ordinary skill in the art in the time of the invention to implement Bigio et al. approach in Tsuzuki et al., Suzuki and Terasaki apparatus to brightness and chromaticity of the liquid crystal panel are corrected by controlling light emission of the backlight according to the measurement values obtained from the optical sensors in such a way that surface temperature of the backlight is kept constant in order to maintain the desired flat panel display luminance (See Col. 2, Line 22 in the Bigio reference).

#### ***Response to Amendment***

8. Applicant's arguments filed on 01-12-04 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Response to Arguments***

9. Applicant's arguments filed on 01-12-04 have been fully considered but they are not persuasive.

In remarks on page 8, 2<sup>nd</sup> paragraph the Applicant's stated no cited reference disclose or suggests separately measuring R, G and B light output from an LCD, However, Tsuzuki et al. teaches three brightness optical sensors are located in facing with R, G and B color pixels so as

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to measure the brightness levels of the R, G and B color pixels (See Fig. 3, items 11R, 11G, 11B, in description See Col. 18, Lines 29-35).

On page 10, 2<sup>nd</sup> and 3rd paragraphs, Applicant argues that Tsuzuki et al. discloses optical and electrical crosstalk. However, the examiner will direct the Applicant to look at Col. 8, Lines 29-35 for claim limitation of “at least first, second and third separate and distinct optical sensors for measuring how the liquid crystal panel is emitting R (red), G (green), B (blue) light”.

On page 11, 2<sup>nd</sup> and 3rd paragraphs in relation to claims 1 and 12, Applicant argues no cited reference disclose or suggests measuring R, G and B light output from an LCD independently from one another. However, the examiner will direct the Applicant to look at Col. 8, Lines 29-35 in Tsuzuki et al. reference for claim limitation of “at least one optical sensors for measuring how the liquid crystal panel is emitting R (red), G (green), B (blue) light”.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

The Takuo (JP 08-313879) reference discloses the method of adjustment of brightness and hue of LCD device with backlight.

### ***Telephone inquire***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

Is

A handwritten signature in black ink, appearing to read 'Vijay Shankar', written in a cursive style.

**VIJAY SHANKAR  
PRIMARY EXAMINER**